

Daniel BALLIN, *et al.*
Serial No. 10/550,205
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AMENDMENTS TO THE CLAIMS:

This listing of claims supersedes all prior versions and listings of claims in the application:

1. (Currently Amended) A method of generating behavior for an object under the control of a behavioral controller comprising a framework of nodes, at least one node being arranged to map its input to provide output to other nodes in both a forwards and backwards direction through said framework of nodes and at least one node arranged to assign a global framework parameter value, said method comprising:

receiving input associated with one or more behavioral actions;

inferring for a plurality of behavioral nodes in said framework, a behavioral parameter value from said input in accordance with said behavioral framework;

mapping said global parameter values in a forwards direction through each node of said framework;

deriving output from the inferred plurality of behavioral parameter values[[;]] for behavioral output nodes of the behavioral framework; and

generating equivalent behavior by the object using the derived output.

2. (Original) A method as claimed in claim 1, wherein the framework has an internally flexible structure.

3. (Previously Presented) A method as claimed in claim 1, wherein the framework comprises a hierarchy of behavioral nodes, at least one behavioral node being arranged to receive input from a plurality of differing sources taken from the group of:

- input provided from one or more output nodes of another framework;
- input comprising a parameter value from another behavioral node; and
- input comprising a global parameter value of the framework indirectly or directly provided by a global parameter node.

4. (Previously Presented) A method as claimed in claim 1, wherein the framework is dynamically flexible.

5. (Previously Presented) A method as claimed in claim 1, wherein input received is associated with a plurality of behavioral actions, and each inferred parameter value is determined by a combination of said plurality of behavioral action inputs.

6. (Previously Presented) A method as claimed in claim 1, wherein the input comprises a set of at least one behavioral parameter value directly associated with output which generates the behavioral action, wherein in the step of inferring, at least one or

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more other behavioral parameter values are inferred by performing a reverse map through the framework from which further output is derived to generate additional behavior to the behavioral action.

7-10. Cancelled

11. (Previously Presented) A method as claimed in claim 1, wherein said framework comprises a plurality of behavioral nodes associated with a function operating on one or more parameter values to provide output which modifies a characteristic of the behavior of the object, wherein the function operates on at least one global behavioral parameter associated with a mood state of the object, wherein whereby the behavior of the object provided by output from an output node of the framework is modified to indicate the mood the object is in.

12. (Previously Presented) A method as claimed in claim 1, wherein the framework comprises a plurality of behavioral nodes associated with a function operating on one or more parameter values to provide output which modifies a characteristic of the behavior of the object, wherein the function operates on at least one behavioral parameter value assigned uniquely to a behavioral node of the framework and wherein the output

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generated by a behavioral node of said framework from said input uses said function to operate on an internal parameter value associated with a personality trait affecting a characteristic of the behavior of the object.

13-16. Cancelled

17. (Previously Presented) A method as claimed in claim 1, wherein the equivalent behavior by the object comprises a plurality of behavioral actions performed in a predetermined sequence.

18. Cancelled

19. (Previously Presented) A method as claimed in claim 17, wherein the plurality of behavioral actions are performed over a period of time.

20. (Previously Presented) A method as claimed in claim 17, wherein one or more of said plurality of behavioral actions are performed simultaneously.

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21. (Previously Presented) A method as claimed in claim 1 wherein the behavior includes a behavioral action taken from a group including: eye gaze, limb movement, speech, stance.

22. (Previously Presented) A method as claimed in claim 1, wherein the received input is derived from a behavioral action by the object which has been induced by direct manipulation of the object by a human user.

23. (Previously Presented) A method as claimed in claim 1, wherein the input is received by an input node and is derived from a behavioral action by one or more other objects interacting with the object.

24-26. Cancelled

27. (Previously Presented) A method as claimed in claim 1, wherein the input is received by an input node and includes input associated with a behavioral action performed by a user of the behavioral controller.

28. Cancelled

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29. (Previously Presented) A method as claimed in claim 1, wherein said step of receiving input associated with one or more behavioral actions comprises:

assigning a value to a behavioral parameter set associated with a behavioral characteristic of the object using a behavioral design interface arranged to provide input to the behavioral controller of the object, each said behavioral parameter set comprising at least one parameter affecting the behavioral characteristic;

associating each parameter in the parameter set with a parameter value obtained by performing a function on the assigned value with a default value defined by a behavioral profile; and

inputting the parameter value to the behavioral controller for the object; wherein said step of generating equivalent behavioral by the object using the derived output comprises

associating the output with a behavioral action by the object; and causing the object to perform the behavioral action.

30-41. Cancelled

42. (Previously Presented) A behavioral controller arranged to generate behavior in an object, the controller comprising:

 a framework of nodes, at least one node being arranged to map input to output in both a forwards and backwards direction through said framework of nodes and at least one node arranged to assign a global framework parameter value,

 interface means for receiving input associated with one or more behavioral actions;

 means for inferring for a plurality of behavioral nodes in said framework, a behavioral parameter value for each node from said input in accordance with said behavioral framework,

 means for inferring from each of said behavioral parameter values one or more global parameter values for one or more global parameter nodes in said framework;

 means for mapping said global parameter values in a forwards direction through each behavioral node of said framework;

 means for deriving output from the inferred plurality of behavioral parameter values for behavioral output nodes of behavioral framework; and

 means to generate equivalent behavior by the object using the derived output.

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43. (Previously Presented) A behavioral controller as claimed in claim 42, wherein the means to generate equivalent behavior comprise means to forward the output derived from the inferred behavioral parameter values to an animation system arranged to operate on the output to cause the appropriate behavior to be animated by the object.

44-48. Cancelled

49. (Previously Presented) A behavioral controller as claimed in claim 42, wherein output from the behavioral controller is provided in a form suitable for being received as input by a behavioral controller of another object.

50. (Previously Presented) A behavioral controller as claimed in claim 42, wherein the behavioral controller generates body language behavior and further comprises a body language translation element for mapping received input derived from behavioral consistent with body language of a first culture to input consistent with body language of a second culture.

51. Cancelled

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52. (Previously Presented) A behavioral controller as claimed in claim 68, wherein the object is a virtual object arranged to operate within a virtual environment is taken from any one of the group of virtual environments consisting of:

a virtual computer game, a virtual on-line meeting, an on-line game, an on-line chat-room, an avatar hosted meeting; an avatar counseling meeting; an avatar based mediation environment; an avatar based sales environment; an on-line collaboration environment; and an on-line customer relationship management environment.

53-55. Cancelled

56. (Previously Presented) A behavioral controller as claimed in claim 42, wherein a software agent provides the input to an apparatus.

57. (Previously Presented) A behavioral controller having a design interface, the interface comprising:

means arranged to allow the assignment of a value to a behavioral parameter set, the parameter set comprising at least one parameter value associated with a behavioral characteristic of the object, wherein the value assigned using the interface is provided as input to the behavioral controller as claimed in claim 42.

58. (Previously Presented) A behavioral controller comprising a device arranged to have a suite of at least one computer program stored thereon, the suite of at least one computer program being executable on the device so as to cause the device to function as a behavioral controller as claimed in claim 43.

59-66. Cancelled

67. (Previously Presented) A method as claimed in claim 1, wherein the framework comprises a hierarchy of behavioral nodes, wherein each behavioral node is arranged to provide output through external output nodes to the input nodes in a behavioral framework of another object and to provide behavioral output through behavioral output nodes enabling the behavior of the object to be animated.

68. (Previously Presented) A behavioral controller as claimed in claim 42, wherein the object is a virtual object arranged to operate within a virtual environment.